Status of TZW Issues from April 16, 2008 and April 24, 2008 EPA-DEQ-LWG Meetings

TZW Issue	EPA Comment Reference to Issue	Status of Issue at End of Meeting	Resolution Status
Pore water ventilation fraction	January 15 EPA Comments 324, 332, 382, 422; p. 39 of EPA's 2/15/08 ecological problem formulation	During the April 16 meeting, John Toll presented the LWG's proposal to adjust TZW concentrations using an appropriate pore water ventilation fraction to develop more realistic exposure concentrations in the ecological risk assessment exposure analysis. Jennifer Peterson expressed a concern that this approach lacks precedent at other sites, and she expressed skepticism that pore water ventilation fractions developed for bioaccumulation would be relevant for direct effects, since the exposure routes potentially differ. Eric Blischke expressed a general frustration with the LWG's repeated proposals to move away from direct comparisons of TZW concentrations with AWQC by use of adjustment factors. He further indicated that EPA position is that the AWQC are not screening levels, but are standards that are directly relevant for evaluating the presence or absence of unacceptable risks. In general it did not appear that several of the participants in the discussion were prepared to discuss the technical details and relevant literature regarding pore water ventilation. Agency representatives did, however, indicate they were open to consideration and application of relevant technical information in the ecological risk assessment, suggesting that further technical evaluation of the LWGs proposal may be warranted. The agency representatives also suggested the concept of assuming 100 percent TZW ventilation for the RME scenario, and applying a literature-based ventilation fraction for the CTE. The agency representatives further suggested that a pore water ventilation fraction might be appropriate for bioaccumulation.	Resolved. During the April 23 meeting on the BERA, the LWG agreed to perform the work directed in the revised BERA problem formulation as agreed to by EPA and the LWG (to be prepared in early summer 2008) and will also provide additional analysis and evaluation of scientific information pertaining to the estimation of the pore water ventilation fraction, as appropriate for a baseline risk assessment. The additional analyses and evaluation will be included in the uncertainty subsection of the TZW exposure analysis and in the uncertainty section of the risk characterization.

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Consideration of background metals in TZW (eco risk characterization)	January 15 EPA Comments 243, 382, 385	During the April 16 meeting, John Toll presented the LWG's proposal to incorporate background & sediment chemistry information at the risk characterization stage of the BERA TZW evaluation. There was brief discussion of the background geochemical evaluation presented in the Round 2 report and potential limitations with that analysis because data were collected from potential plume discharge areas and not from reference locations. Based on this, agency representatives indicated that they were not convinced by the Round 2 background evaluation and that LWG would need to do more to convince EPA that the ranges of concentrations of As, Ba, and Mn in TZW are a background phenomenon that is unrelated to upland contaminant releases to groundwater and/or in-water sediment contamination.	Unresolved. LWG Proposed Resolution: Metals in TZW will not be screened out of the BERA on the basis of background. The LWG proposes to include additional discussion of geochemical controls on metals in pore water in the risk characterization section of the BERA. Relevant literature information on naturally occurring levels of As, Ba, and Mn in low-redox sediment pore water will also be presented. This discussion will acknowledge the limitations of the available pore water and upland groundwater data set and the resulting uncertainties in determining the source of these metals.
Scope of TZW evaluation for shellfish consumption scenario in HHRA	N/A	There was a brief discussion of whether TZW should be evaluated in the HHRA at all, since there are no direct HH exposure pathways to TZW (i.e., TZW is not a direct exposure medium for any HH risk scenarios, but is more correctly viewed a potential source to surface water, sediment, and tissue). In addition, evaluation of TZW for risks in the HHRA is not consistent with the approach for other media (e.g., tissue data will be evaluated in the HHRA for consumption risks, not sediment). Eric Blischke acknowledged that excluding TZW from the HHRA on this basis was a possibility that he would consider. Mike Poulsen suggested	Resolved. Language from 4/24/08 RI/RA Issue Resolution Table: EPA agrees the evaluation of TZW as a source of contaminants in biota is no longer required in the HHRA. EPA may still require TZW data presentation for the purposes of evaluation of the contribution of groundwater to biota tissue.

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		limiting the evaluation of TZW in the HHRA to chemicals for which tissue data are not available. On April 23, 2008, EPA stated that it would not require an evaluation of TZW as a source of contaminants to biota in the HHRA.	
Surface water "exposure point" for drinking water scenario	January 15 EPA Comment 251	It was agreed during the April 16 meeting that TZW would be evaluated as a loading term to the water column; TZW will not be evaluated as a drinking water source. It was further agreed that the loading/mixing evaluation for TZW should be conducted at the scale selected for the drinking water scenario. The appropriate scale for the drinking water scenario in the HHRA was discussed but not resolved. The LWG stated that its interpretation of comment 251 is that EPA had indicated a sitewide average as the appropriate scale or compliance point and that near-bottom surface water samples should not be used in the evaluation of surface water as a drinking water source. Jim Anderson expressed that vertically-averaged, but location-specific, surface water data should be evaluated.	Partially Resolved. Language from 4/24/08 RI/RA Issue Resolution Table: The LWG will …estimate the average surface water concentrations associated with transition zone water discharges through loading calculations. The estimated surface water concentrations will be compared with MCLs and Region 6 Tap Water PRGs. EPA agrees that the LWG and its members have preserved their ability to object to addressing this risk pathway in any manner in the evaluation of remedial alternatives. The "exposure point" for the drinking water evaluation (i.e., sitewide average concentrations or location-specific, vertically integrated concentrations) has not yet been resolved.

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TZW EPC calculations for clam consumption scenario	January 15 EPA Comment 252	During the April 16 meeting, the LWG expressed that TZW EPCs for the clam consumption scenario should be calculated at a scale that matches the relevant exposure area. For clam consumption, which will be evaluated on a river mile basis, the LWG proposed that TZW EPCs be calculated using the 95 UCL on the mean concentration for individual discharge areas (and applied at the river mile scale per EPA comment 252). Dana Davoli expressed concern about using anything other than the maximum concentration measured in a discharge area, given the small sample size of the TZW dataset.	Resolved. Language from 4/24/08 RI/RA Issue Resolution Table: EPA agrees the evaluation of TZW as a source of contaminants in biota is no longer required in the HHRA. EPA may still require TZW data presentation for the purposes of evaluation of the contribution of groundwater to biota tissue.
Weighting of tissue data vs. TZW data in shellfish consumption scenario	January 15 EPA Comment 253	See above topic, "Scope of TZW evaluation for shellfish consumption scenario in HHRA."	See above topic, "Scope of TZW evaluation for shellfish consumption scenario in HHRA"
Use of AWQC as PRGs and/or ARARs for TZW	March 20, 2008 EPA Comment Letter on R2 Report Section 10: Section 10.1.1.1.2—Approach for TZW, page 5 April 16, 2008 EPA revised PRG framework table	Eric Blischke stated during the April 16 meeting that PRGs/RGs would be established for TZW using AWQC for fish consumption (17.5 g/day) and for protection of aquatic life, alongside bulk sediment PRGs/RGs. The example he gave was for benzo(a)pyrene (AWQC for fish consumption: 0.018 ug/L). The LWG questioned the need for water-based PRGs/RGs for chemicals that will also have PRGs/RGs for bulk sediment, since the sediment-based criteria include exposures to TZW/pore water (for most chemicals) and are therefore sufficiently protective. Eric responded by writing the words, "promulgated criteria" on the board. This is consistent with a revised draft version of the PRG framework table that Eric distributed earlier in the day on 4/16, which indicates that AWQC (chronic aquatic life and fish consumption) will be ARARs for TZW. He further stated that	Unresolved. The LWG does not agree that AWQC are relevant and appropriate for TZW.

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		remedies will be evaluated against the AWQC as a performance criterion, and that it may ultimately be necessary to obtain an ARAR waiver due to excessive cost or technical impracticability of achieving the AWQC in pore water.	
Use of unfiltered TZW results in risk assessments	January 15 EPA Comments 265, 319, 325, 354, 382, and 469	Near the end of the April 16 meeting, the LWG stated the position that screening would generally be performed using both filtered and unfiltered TZW collected at a depth of 30 cm. An exception to this, which was not specifically discussed in the April 16 meeting, is screening of metals against water quality criteria that were developed specifically for the dissolved fraction; in a meeting with Burt Shepherd on April 14, WW stated that it opposes the screening of total metals against the dissolved metals criteria and is requesting written notification from EPA not to compare total metals concentrations to dissolved metals criteria in the BERA, including the initial and refined screening steps. Further evaluation in subsequent stages of the risk assessment (i.e., refined screen, risk characterization) will focus on the sample fraction that is most relevant for the exposure pathway and/or toxicity benchmarks under consideration. For example, it is appropriate to use filtered results for evaluation of bioaccumulation potential. There was not significant discussion of this issue during the meeting.	Resolved. EPA agreed during the 4/23/08 meeting on BERA Problem Formulation that total metals concentrations will not be screened against dissolved metals criteria.

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Use of deep TZW results in the RI and BLRA	January 15 EPA Comments 253, 264, 319, and 382	Also near the end of the meeting, the LWG stated its position that TZW collected from depths of 90-150 cm should not be evaluated in the HHRA or ERA, because water collected from these depths is unrepresentative of actual exposure. However, the LWG stated that it would screen the deeper TZW results for the purpose of identifying chemicals in TZW that would be evaluated in the fate and transport evaluation, specifically in terms of advective transport/loading from deeper sediments to shallow sediments.	See previous column.
Application of AWQC to calculated TZW concentrations in areas of the river outside plume discharge areas	Issue raised by EPA at April 16 and 17 meetings.	During the April 16 meeting, EPA indicated that the LWG should calculate theoretical TZW concentrations using equilibrium partitioning and sediment data for harbor areas outside of plume discharge areas and then compare the calculated values to fish consumption AWQC. Apparently this analysis would be used as a LOE to define AOPCs. Comparison of the calculated TZW values to ecological AWQC may not be needed as Equilibrium Sediment Benchmarks (ESBs) could be used to evaluate potential eco effects from TZW relative to AWQC. This request was based on EPA's view that AWQC are likely ARARs for TZW and DEQ's policy of assessing "aggregate" risk.	Unresolved. The LWG does not agree that AWQC are relevant and appropriate for TZW.